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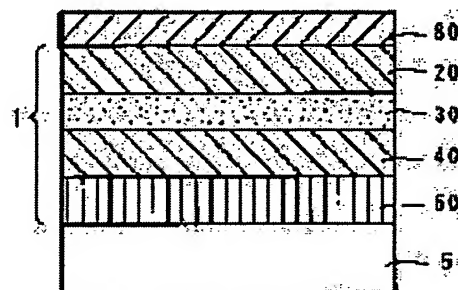
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(54) MAGNETIC MULTILAYER FILM, MAGNETIC RESISTANCE EFFECT ELEMENT AND MAGNETIC CONVERSION ELEMENT

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a magnetic multilayer film showing a large MR change rate, showing the rising characteristics of linear MR change of applied magnetic field in a very small range of -10 to 10 Oe or thereabout, for example, and also having high sensitivity of magnetic field and large MR(magneto-resistance) tilt in a high frequency magnetic field.

SOLUTION: An oxide anti-ferromagnetic layer 50, a pinning ferromagnetic layer 40 which is pinned by the oxide anti-ferromagnetic layer 50, a non-magnetic metal layer 30, and a free ferromagnetic layer 20 are laminated successively on a substrate 5 in this multilayer film 1. In the case, the surface roughness on the pin-stopping ferromagnetic layer side of the oxide anti-ferromagnetic layer is 0.6nm or smaller, and the crystal grain diameter D of the oxide anti-ferromagnetic layer 50 is 10 to 40nm.



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